Exploring Intergenerational Continuity in Gang Membership

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Abstract

Little is known regarding intergenerational continuity in gang membership. Qualitative literature is suggestive of intergenerational parallelism yet no known research examines the causal mechanisms associated with this cycle, if it even exists. Prospective, longitudinal data from the Rochester Youth Development Study (RYDS) and the Rochester Intergenerational Study (RIGS) assess intergenerational continuity in gang membership among 371 parent-child dyads in a series of logistic regressions accounting for moderating influences of parent sex, child sex, parent-child sex combinations, and level of contact. Path analyses reported herein explore whether parenting behaviors mediate the relationship between parent and child gang membership among fathers and mothers, respectively. Three key findings emerge. First, intergenerational continuity in gang membership exists between mothers and daughters and, conditional on contact, between fathers and sons. Second, maltreatment mediates some of this relationship among father-son dyads. Third, no pathways to daughter gang membership were identified among mothers. In sum, this study provides evidence of intergenerational continuity in gang membership and further highlights the importance of parent sex, child sex, and level of contact in intergenerational research. Future research should further explore the causal pathways between parent and child gang membership.

Keywords

Gangs; Intergenerational Continuity; Maltreatment; Gender

Little is known about intergenerational continuity in gang membership, including whether or not the cycle of gang membership even exists (Dong, Gibson, & Krohn, 2015). By in large, qualitative research suggests that intergenerational parallelism in gang membership exists, but these studies are limited to locales with long-standing gang problems resulting from migration/immigration (e.g., Los Angeles and Chicago) and utilize respondent reports of

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past generation participation (Horowitz, 1983; Moore et al., 1978; Vigil, 1988). Unfortunately, reliance upon this type of research as evidence for a cycle of gang membership is potentially problematic from validity and generalizeability standpoints.

Recognizing the limitations in extant literature, this research assesses intergenerational continuity in gang membership using data from a jurisdiction with an emergent gang problem at the time of measurement for parental gang membership (i.e., 30 years ago). We believe the focus on this jurisdiction is advantageous from a generalizeability standpoint for two reasons. First, the type of gang classification (i.e., emergent problem) in this city is similar to the majority of locales with gang problems in the United States (Howell, Egley, & Gleason, 2002; Howell, 2015). Second, gang membership in this location taps into participation in criminal organizations that formed on the street and operate in neighborhoods without known leadership beyond one's community, and it is these types of gangs that pose the most significant threat to communities (National Gang Intelligence Center, 2015). As a result, this research speaks to the cycle of gang membership in a broader perspective (i.e., not limited to cities with culturally entrenched gangs). We also determine whether or not the cycle of gang membership exists in accordance with methodological criteria necessary to establish intergenerational continuity (Ertem, Leventhal, & Dobbs, 2000; Thornberry, Knight, & Lovegrove, 2012). Specifically, prospective, longitudinal data from two generations are used to assess self-reported gang membership in the focal generation (children) and parent generation. Moreover, the data cover overlapping periods of the life course when gang membership is prominent (ages 13-17) in order to more definitively assess continuity in gang participation. Finally, we draw upon extant literature regarding intergenerational continuity, in general, and assess continuity across parent sex, child sex, parent and child sex combinations and level of contact in order to speak to the scope of intergenerational continuity in gang membership.

The question of whether or not intergenerational continuity in gang membership exists and the scope of that continuity are important because, if this cycle does exist, the results have significant implications for targeted prevention strategies among the children of former gang members. However, equally important is the identification of the mechanisms that account for intergenerational continuity and lead to intergenerational transmission of behavior. This information is particularly useful, as it can provide targeted goals for prevention programs aiming to reduce gang participation. Therefore, this research also takes advantage of the richness of the Rochester Youth Development Study and the Rochester Intergenerational Study data and explores potential indirect mechanisms that may link parental gang membership to subsequent participation in gangs by one's child.

As a starting point, we briefly review what is known about intergenerational continuity in gang membership. Given the limited information, we then draw upon interactional theory which would suggest the cycle of gang membership likely exists. In particular, we adopt a life course perspective and highlight the consequences of gang membership that are likely to link parental gang membership to child gang membership. We then focus on parenting behaviors as an intervening mechanism that may perpetuate the cycle of gang membership given the importance of the family domain to the notion of linked lives and its prominence in developmental theories of gang behavior (Howell & Egley, 2005; Thornberry et al., 2003a).

Intergenerational Gang Membership

Intergenerational continuity of maladaptive behaviors refers to the basic idea that children will end up like their parents in one or more problematic ways. Thornberry and colleagues (2003a) distinguish intergenerational continuity from intergenerational transmission, the latter of which refers to present consequences for children due to current parent behaviors and circumstances. A particularly important distinction is that intergenerational continuity refers to parallelism in behavior during the same period of the life course across generations. Evaluations of intergenerational continuity in maladaptive behaviors span a wide range of antisocial behaviors including substance use (Velleman, 1992; Pears, Calpaldi, & Owen, 2007; Knight et al., 2014; Capaldi et al., 2015), arrests and convictions (Miller & Barnes, 2013; Farrington, Coid, & Murray, 2009; Van de Rakt, Ruiter, Dirk De Graaf, & Nieuwbeerta, 2010; Besemer et al., 2016), and conduct problems and antisocial behavior (Junger, Gree, Schipper, Hesper, & Estourgie, 2013; Raudino, Fergusson, Woodward, & Horwood, 2013; Thornberry et al., 2003a) to name a few. However, literature regarding intergenerational continuity in gang membership is scarce and exclusively qualitative in nature.

In his assessment of Chicano gangs in Los Angeles, Vigil (1988; 2002) notes a tradition of gang membership in Chicano culture and invokes the notion of intergenerational influences on gang participation among Chicano youth. Similarly, Moore and colleagues (1978) underscore the importance of intergenerational influences as current adult gang members passed along the culture of gang membership within Mexican-American neighborhoods in East Los Angeles. Horowitz (1983) also proposed an intergenerational aspect to gangs as membership was a form of honor passed down through Chicano culture in her research examining the Lions gang in Chicago. Taking note of extant research, Huff (2001) argues that intergenerational continuity in gang membership is probably more common in cities with long-standing gang problems that are tied to ethnic and cultural identity resulting from immigration or migration. Nevertheless, given the shortage of research, we are far from being able to make a conclusive statement regarding the existence of a cycle of gang membership.

In contrast to the ethnographic studies of Vigil (1988; 2002), Moore and colleagues (1978), and Horowitz (1983), Decker and Van Winkle (1996) found little evidence of an intergenerational character to gang membership in St. Louis (p. 232) in their research conducted in the late 1990s. Among interviewed gang members, only a small number (n=13) reported that one of their parents was previously in a gang, and many parents who participated in gangs did so in a different city (e.g., Chicago versus St. Louis). Over 80% of their sample, on the other hand, indicated that they were unsure as to whether or not a parent was in a gang or they indicated that their parents were not gang members, which suggests a lack of continuity in gang membership predominates. However, this lack of evidence of intergenerational continuity in gang membership may be tied to the emergent nature of gangs in St. Louis in the last two decades of the 20th century. As we have now eclipsed the third era of gang membership and growth (Howell, 2015), the time is ripe to further explore intergenerational continuity in gang membership outside of specific cities with culturally entrenched gangs, as street based gangs, that make up the third era of gang membership and

growth, have continued to proliferate over the past 30 years in the majority of cities with gang problems (National Gang Intelligence Center, 2015). We now discuss the theoretical foundations regarding why we would expect to see intergenerational continuity in gang membership, particularly in locations where specific gangs are not deeply ingrained in the city's culture and history.

Theoretical Foundations for Intergenerational Continuity

Developmental and life course theories have been extended to explain how what occurred and is occurring in the lives of one generation affect what happens in the lives of the next generation (Thornberry, 2005; Thornberry, 2009; Capaldi, Pears, Patterson & Owen, 2003; Conger, Neppi, Kim & Scaramella, 2003; Kaplan & Tolle, 2006). The current research is premised on the application of interactional theory (Thornberry, 1987; Thornberry & Krohn, 2001; Thornberry & Krohn, 2005) to intergenerational continuity (Thornberry, 2005; Thornberry, Krohn, & Freeman-Gallant, 2006). Interactional theory is particularly appropriate for the examination of intergenerational continuity because one of its key assumptions is the importance of the consequences of delinquent behavior not only in the lives of one generation but also in the lives of the next. Moreover, the theory recognizes the importance of the degree of involvement in delinquent activity so that the more embedded the person is in delinquent behavior the more problematic the consequences will be and the greater the risk of intergenerational continuity (Thornberry, 2005). Gang membership represents a high degree of embeddedness in a delinquent life style (Hagan, 1997; Krohn et al., 2011) and therefore the consequences should be problematic both for the one generation and their offspring.

Interactional theory suggests that involvement in serious delinquency will have negative impacts on the ability of individuals to successfully make the transition to adult statuses. In turn, less successful transitions increase the risk of experiencing structural adversity such as difficulty in completing an education and obtaining a career-oriented job. These deficits increase structural adversity, stress, and create the conditions for a greater likelihood of the continuity in deviant behavior among the next generation. Moreover, these problems combine to adversely affect partner relationships. In tandem, the aforementioned consequences arising from involvement in serious delinquency in one generation jeopardize effective parenting of the next generation. Thornberry (2005: p. 183) asserts that parenting style "…is likely to be the most powerful and proximate influence mediating the effect" of prior antisocial behavior and its consequences on the antisocial behavior of children. While the theory recognizes that some of the effects of parental involvement in delinquent and criminal behavior directly relate to antisocial behavior among children because parents can serve as role models providing the child with both antisocial norms and reinforcements for deviant behavior, it hypothesizes that '…the dominant pathway is indirect, mediated by family processes like family conflict, hostility and especially by the quality of parenting" (Thornberry, 2005, p. 183).[1]

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[1]This is very similar to the arguments of Giordano (2010) who refers to direct transmission (i.e., modeling behaviors and conveying attitudes) and indirect transmission (i.e., providing poor environmental conditions and ineffective coping strategies) of antisocial behavior.

Our examination of the intergenerational continuity in gang membership does not attempt to examine all the potential mediating factors that account for the relationship. Rather, we focus on the hypothesized prominent mediating role of the quality of parenting in the cycle of gang membership. We now review research on the consequences of gang involvement and demonstrate how involvement in gangs has particularly salient consequences that affect the ability of parents to effectively raise their children.

Consequences of Gang Membership

Gang involvement represents a particularly pernicious form of embeddedness in problematic behavior (Battin et al, 1998; Krohn & Thornberry, 2008; Snyder & Sickmund, 2006; Thornberry et al, 1993; 2003b). Gang members contribute disproportionately to both violent and non-violent crime (Snyder & Sickmund, 2006; Thornberry et al., 2003b). Additionally, gang membership amplifies the rate of crime during the time individuals are in the gang and, to a lesser extent, when they leave the gang (Battin et. al., 1998; DeLisi et al., 2009; Krohn & Thornberry, 2008; Thornberry et al., 1993).

Given the impact of gang membership on the prevalence and incidence of crime, it is not surprising that membership in a gang is also related to problematic outcomes for other life course transitions and trajectories. Gang members are less likely to graduate from high school (Curry & Decker, 1998; Gilman, Hill, & Hawkins, 2014; Hagedorn, 1998; Krohn et al, 2011; Melde & Esbensen, 2011; Pyrooz, 2014a; Hagedorn, 1998; Moore, 1991; Thornberry et al., 2003b) and to obtain steady employment (Curry & Decker, 1998; Gilman et al., 2014; Krohn et al., 2011; Melde & Esbensen, 2011). In addition, gang members are also more likely to be teenage parents and cohabit in their late teens and early adulthood (Krohn et al., 2011; Thornberry et al., 1997; Thornberry et al., 2003b). The result of these processes is a greater likelihood of economic hardship (Harden et al., 2009; Krohn et al., 2011) and stymied social development.

The difficulties in making a successful transition to adulthood incurred at least partially by having been involved in a gang combined with the higher probability of continued involvement in criminal behavior and drug use, create stress and conflict within the family (Krohn et al., 2011; Thornberry, 2009) that foster ineffective parenting (Thornberry, 2009; Augustyn et al., 2014). As interactional theory suggests, ineffective parenting (e.g., maltreatment, lack of supervision, inconsistent discipline) is the prime reason for involvement in delinquent and criminal behavior and, in turn, gang membership of the next generation (see also Howell & Egley, 2005).

Although interactional theory views ineffective parenting as the key mediating variable in the continuity of gang membership, there is actually very little research examining either the impact of gang membership on parenting or the role that parenting has in the continuity of gang membership across generations (for an exception, see Augustyn, Thornberry, & Krohn, 2014). However, prior research focuses on the impact of involvement in criminal and drug using behavior on parenting and the potential mediating role of parenting in the continuity of deviant behavior, in general, and these studies provide key insights useful for our investigation of intergenerational continuity in gang membership.

From Consequences to Risk: The Importance of Parenting

Research on the intergenerational continuity of antisocial behavior generally confirms an association between the problematic behavior of parents and that of their children (e.g., Besemer et al., 2016; Farrington, 1977; 2011; Thornberry, 2009; Van der Weijer, Augustyn, & Besemer, 2016; for exceptions see Cohen et al., 1998; Smith & Farrington, 2004). While there are several mechanisms that may explain intergenerational continuity such as criminogenic environments, learning, genetic transmission, official bias, and assortive mating (for a review, see Farrington, 2011), Auty and colleagues (2015, p. 4) note that "parenting practices have attracted the most attention in the empirical research literature and are thought to be important in explaining the intergenerational transmission of criminal behavior."

Using data from the Rochester Youth Development Study/Rochester Intergenerational Study, Thornberry (2009) and his colleagues (Thornberry et al., 2009) find that ineffective parenting in the form of low levels of attachment between parent and child, a lack of monitoring and supervision, and inconsistent discipline mediate the link between parent and child antisocial behavior, for both mothers and fathers (see also Thornberry et al., 2003a). Specifically, adolescent drug use and involvement in delinquency were significantly associated with a composite index of ineffective parenting which, in turn, was negatively associated with child externalizing behaviors. Using data from a sample of junior-senior high schools from the Houston Independent School District, Kaplan and Liu (1999) found a strong intergenerational link in antisocial behavior, and ineffective parenting, which included parental surveillance of adolescent behavior, partially mediated this relationship. Similarly, Ehrensaft et al. (2003) found evidence to suggest parenting practices, including family conflict and low parental monitoring, mediated the relationship between parent conduct disorder and child antisocial conduct. More recently, Dong and Krohn (2015) produced developmental trajectories of offending among parents and their children using data from RYDS/RIGS and used these trajectories to examine intergenerational continuity and discontinuity in antisocial behavior. While they found support for both continuity and discontinuity, pertinent to this research is the finding that consistency of discipline by one's parent during childhood was a significant mediator of continuity in offending behavior across generations. Taken together, there is evidence to support the idea that parenting practices are an important, though likely partial, explanation for the relationship between the parent's past antisocial behavior and the child's current antisocial behavior.

In a similar vein, parenting practices may serve as an important mediator of intergenerational continuity in gang membership, should it even exist. The family is one of several domains of risk for gang membership and cumulative risk across multiple domains (i.e., individual, family, peer, school, and neighborhood/community) is particularly problematic (Hill et al., 1999; Thornberry et al., 2003b). Yet, Howell and Egley (2005) emphasize family process and parenting as particularly important in the developmental model of gang membership and there are numerous studies suggesting that various ineffective parenting behaviors are risk factors for gang membership (see Hill et al., 1999; Howell & Egley, 2005; Lahey et al., 1999; Thornberry et al., 2003b). With respect to the most serious form of ineffective parenting, child maltreatment is associated with gang

membership (Thompson & Braaten-Antrim, 1998; Thornberry et al., 2003). Moreover, ineffective parenting styles including inconsistent discipline and low levels of attachment are linked to participation in gangs in late childhood and early adolescence (Hill et al., 1999; Lahey et al., 1999; Thornberry et al., 2003; for an exception see Gilman et al., 2014). This line of research, in general, leads to the notion that ineffective parenting should, at least partially, explain any intergenerational continuity in gang membership.

Current Study

As it stands currently, we know little about the cycle of gang membership including whether or not it exists. Therefore, we draw upon the interactional theory of intergenerational continuity in maladaptive behaviors (Thornberry, 2005) and integrate research on the nature and consequences of gang membership with the known predictors of gang membership and examine the following hypotheses regarding intergenerational continuity in gang membership.

1.   G2 gang membership is a predictor of G3 gang membership.

2.   G2 gang membership negatively affects G2 parenting behaviors in the form of ineffective parenting.

3.   Ineffective parenting behaviors by G2 predict G3 gang membership.

4.   Ineffective parenting behaviors by G2 mediate the relationship between G2 gang membership and G3 gang membership.

In any study of IG continuity, it is important to acknowledge the sex of the parent, the sex of the child, and the level of contact between parent and child as complex intergenerational pathways likely exist across these contingencies. It is well documented that parenting behaviors vary for mothers and fathers (e.g., Craig, 2006) and for sons and daughters (e.g., Hagan, Gillis, & Simpson, 1990). Evidence also indicates that the antisocial behavior of fathers and mothers differentially affect children with evidence of greater continuity in antisocial behavior between fathers and their children compared to mothers and their children (Auty, Farrington, & Coid, 2015; see also Henry & Augustyn, 2016). The sources of continuity may also vary, which is in line with research conducted by Thornberry and colleagues (2003a) who found a direct relationship between parent adolescent delinquency and child delinquency among fathers and evidence for partial mediation through parenting behaviors, but this same relationship was entirely mediated by parenting behaviors among mothers. In addition, sex of the child is important to intergenerational research. While in most cases the risk factors for antisocial behavior are the same between sexes, the degree to which individuals are negatively affected by risk factors varies across sex (Smith & Paternoster, 1990), and this may affect continuity in behavior. Given these potential differences, it is no surprise, then, that research indicates intergenerational continuity, at times, varies by parent-child sex combinations. Whereas Kim and colleagues (2009) found that father externalizing behaviors exerted a stronger influence on daughters' externalizing behaviors than on sons', Auty and colleagues (2015) found that the strongest evidence of intergenerational continuity was between mothers and daughters with respect to convictions. With respect to the focus of this research - gang membership - some literature suggest that

family processes including ineffective parenting are only relevant for male participation in gangs (Thornberry et al., 2003b) whereas other work demonstrates comparable relationships across sex (Bell, 2009; Hill et al., 1999; Peterson & Howell, 2013).

To this end, the sex of parent and child are particularly important to the study of intergenerational continuity in gang membership. Furthermore, prior research has demonstrated that level of contact between a parent and child, especially fathers, is also likely to be important as it can speak to the degree to which a child is subject to the risk presented by the parent (Thornberry et al., 2006). With these potential contingencies in mind, a full depiction of our proposed theoretical model of intergenerational continuity in gang membership with potential moderators can be seen in Figure 1.

Data and Methods

To explore intergenerational transmission in gang membership, we use data from two longitudinal, companion studies - the Rochester Youth Development Study (RYDS) and its intergenerational extension, the Rochester Intergenerational Study (RIGS). The RYDS data originally consisted of birth cohort 1,000 adolescents (referred to as G2; their primary caregiver is referred to as G1) and it is representative of the 7th and 8th grade public school population of Rochester, NY in 1988, an urban jurisdiction with a high crime rate (Howell et al., 2011). The following sampling strategy was used to account for the fact that the base rates of serious delinquency and drug use are relatively low (Elliott, Huizinga, & Menard, 1989; Wolfgang, Thornberry, & Figlio, 1987). First, males were oversampled *(*75% versus 25%*)* because they are more likely than females to engage in serious antisocial behaviors (Blumstein et al., 1986). Second, adolescents who lived in areas of the city with a high proportion of adult offenders where oversampled on the premise that youth residing in these areas were at a greater risk for offending. The resident arrest rate for each census tract in Rochester was calculated using the proportion of the total population living in that tract arrested by the Rochester police in 1986. Adolescents were sampled proportionate to the rate of offenders living in their tract of residence.

Adolescents (G2s) completed face-to-face interviews in school or home every six months from 1988-1992 (Phase 1), annually from 1994-1996 (Phase 2), and biannually from 2003 to 2006 (Phase 3), spanning the average age of 14 to 31. This information is supplemented with school records (Phase 1), social service records from New York State Office of Child and Family Services (OCFS; Phase 1) and official arrest records collected from the state of New York and the FBI. G1 was also interviewed every six months (up to 8 times) in Phase 1 and annually in Phase 2 (up to 11 times total). The comparison of characteristics of those who were retained at Phase 3 to those who left the study demonstrates that attrition does not bias the sample (Bushway et al., 2013; Thornberry, 2013).

Beginning in 1999, RIGS recruited G2's oldest biological child (G3) to participate in the study and added new firstborns to the G3 sample when they turned two in each subsequent year. Both G2 and G3's other primary caregiver completed annual interviews since the inception of RIGS or when G3 turned two years of age. These interviews continue until G3 turns/turned 18. Beginning at the age of eight, G3 completed annual interviews. To date,

there are prospective, longitudinal data on 529 parent-child dyads, our unit of analysis. All data collection procedures for RYDS and RIGS were approved by the University at Albany's Institutional Review Board.

Sample

The present analysis utilizes data from 371 parent-child (G2-G3) dyads; this includes all dyads in which G3 was at least 17 by the last available RIGS interview (collected through 2015) in order for us to construct consistent measures of the prevalence of G3 gang membership by the age of 17 across all parent-child dyads. We require G3s to be at least 17 years of age in order to cover a significant period of the life course where youth join gangs and to generate a large enough sample size to perform analyses of IG transmission of gang membership. We selected this cutoff given recent work by Pyrooz (2014b) indicating that close to 90% of gang members first join a gang prior to the age of 18.[2] Notably, we have yearly G3 interview data from each dyad beginning at the age of eight and all of our data taken from G3 interviews is ascertained after the age of eight. The gender representation of G2s is skewed towards G2 males (60% male), which is expected given the initial sampling strategy of RYDS, and are predominantly minorities (77% Black and 14% Hispanic). G3s are approximately evenly split by sex (49% male).

Measures

Dependent Variable—Our dependent variable is *G3 gang membership*. Prior research suggests that self-nominations of gang membership are a valid indicator of gang membership (Esbensen et al., 2001) and are able to distinguish between gang members and non-gang members with respect to delinquent attitudes and delinquent behaviors (Matsueda et al., 2013). When G3s were 12 years old (and all G3 were part of the study by the age of 12), RIGS asked G3s "have you ever been a member of a street gang or posse" (0=no and 1=yes). This was followed by the questions, "how old were you when you joined?" and "since your last interview, were you a member of a street gang or posse?" (0=no and 1=yes).[3] Our measure of G3 gang membership is a binary variable indicating if the subject ever self-reported participating in a gang through age 17.

Independent Variable—*G2 Gang Membership* is also measured using the self-report method. In wave 2 of RYDS, G2s were asked, "were you ever a member of a street gang or posse" (0=no and 1=yes). In each additional wave (through wave 12), subjects were asked since the date of the last interview, "were you a member of a street gang or posse" (0=no and 1 = yes). Additional analyses with the RYDS data reveal that this self-report measure of gang-membership generates a nearly identical list of gang members based on other selection criteria such as the name of the gang (verified), size of the gang, or role in the gang (Thornberry et al., 1993), and it has good predictive validity as it is strongly related to serious, violent delinquency, drug use, drug sales, and weapon carrying (Thornberry et al.,

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[2]We rightfully acknowledge that we do not examine the role of IG transmission among adult onset gang members. In all likelihood, the causes of gang membership among those who join for the first time at age 18 or older are likely different from those who join a gang for the first time as a juvenile.
[3]The age of first self-reported gang membership is also used to ensure temporal ordering between our independent variable, mediators, moderators, and G3 gang membership.

2003b). Our measure of G2 gang membership is a binary variable indicating if G2 ever self-reported gang involvement spanning waves 2 to 12 (through average age 23).

Proposed Moderators of IG Transmission in Gang Membership—We explore three potential moderators of the relationship between G2 gang membership and G3 gang membership. *G2 sex* or parent sex is measured using a binary variable (0=female and 1=male). Similarly, *G3 sex* or child sex is measured with a binary indicator (0=female and 1=male). The level of contact between G2 and G3 is measured using RIGS data spanning G3 ages 9 to 11, which is prior to G3 first joining a gang. In each RIGS interview, G2s self-reported whether or not G3 currently lived with them (0=no and 1=yes). If G2 reported the child did not live with them, then he or she was queried about the level of contact with the child. This information was combined to construct a scale of G2 contact with G3 (0=no contact, 1=visits with G3 or phone contact with G3 but no supervision of G3, 2=supervisory contact of one hour or more at least once or twice a year, 3=supervisory contact of at least one hour or more less than once a month, 4=supervisory contact of at least one hour or more at least one or more times a month, 5=supervisory contact of at least an hour at least once a week, and 6=lives with G3. From this information, we created a set of non-mutually exclusive binary variables indicating the level of contact between G2 and G3 in early childhood spanning ages 9 to 11 - *any supervisory contact*, *monthly supervisory contact*, *weekly supervisory contact*, and *G2 lives with G3*.

Potential Mediators of IG Transmission in Gang Membership—We analyze three potential mediators of the relationship between G2 gang membership and G3 gang membership. Our first mediator is *G2 maltreatment of G,3* and it includes any physical abuse, sexual abuse, emotional abuse, and neglect (Child Abuse Prevention & Treatment Act, 1974; IOM and NRC, 2044) committed by G2 against G3. Information was collected from Child Protective Services (CPS) records at the New York State Office of Children and Family Services (OCFS) through 2010. Information was only collected on substantiated incidents in which G2 was a perpetrator of any type of child maltreatment or where G3 was a victim of maltreatment. This information was then cross-checked and used to create a binary variable indicating whether G2 maltreated G3 (0=no and 1=yes).[4],[5]

Our other two mediators are measured in late childhood, which is temporally prior to G3 gang membership. G2 consistency of discipline is based on G3 self-reports of G2 disciplinary behaviors. We use G3 self-reports of G2 parenting behavior instead of G2 self-reports of parenting behaviors given that perception of parenting is important to antisocial behavior and prior research examining the relationship between parenting behaviors and gang membership relies upon subject and not parent self-reports (see Howell & Egley, 2005; Thornberry et al., 2003b). G3 reports of G2 parenting behaviors are also less likely to be

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[4]Additional information was collected indicating the age of G3 at maltreatment. This was used to ensure temporal ordering so that G2 maltreatment of G3 was temporally prior to G3 joining a gang.
[5]There is an element of right-censoring in the measurement of maltreatment perpetration and victimization. If a G2-G3 dyad moved out of New York state, we are unable to assess maltreatment perpetration and victimization. However, the implication of this limitation is that we falsely identify G2s as not perpetrating an act of maltreatment against G3. This would mean that our estimates are biased downward and we are presenting a conservative estimate of the relationship between G2 gang membership, G2 perpetration of maltreatment of G3, and G3 gang membership.

subject to social desirability bias. In each year spanning ages 9 to 11, G3s responded to four questions regarding G2s consistency of discipline (e.g., "Imagine that he/she tells you to stop doing something or you'll get punished. If you don't stop, how often does he/she punish you?"; 0=never, 1=almost never, 2=sometimes, 3=a lot). All responses were coded so that higher values indicate more consistency and an average was taken. We then averaged the yearly (age 9 to 11) indicators of consistency of discipline to get an average level of G2 consistency of discipline in late childhood. Our other measure of G2 parenting is G2's affective ties to G3. In each yearly interview spanning G3 ages 9 to11, G2s responded to 10 questions regarding G2's affect for G3 based on a Hudson's Index of Parental Attitudes(e.g., "you wish your child was more like others you know"; 1=never, 2=seldom, 3=sometimes, 4=often; Hudson, 1996). All items were coded so that higher scores indicate more attachment. We then averaged the yearly (ages 9 to 11) scores of G2 attachment to G3 to get an average level of G2 attachment to G3 in late childhood. Notably, questions pertaining to discipline and attachment were only asked of G2s and G3s if G2 supervised them for a minimum of an hour in the month prior to the interview. Therefore, analyses with our mediators require a minimum of monthly supervisory contact in one year between the ages of 9 and 11.

Control Variables—We include two sets of control variables. The first set of control variables are causally prior to G2 gang membership: *G2 race/ethnicity (*Black, Hispanic, and other is the reference category*); G2 age* at the start of RYDS; *G2 poverty status* at the start of RYDS *(*a binary indicator of poverty level income of G2's family of origin); *G2's community arrest rate*, which is the arrest rate per 100 people based on Rochester Police Records; and *G2 delinquency* at baseline, which is the total frequency of involvement in 28 different criminal behaviors ranging from minor property crimes to serious violent and property crimes such as robbery prior to the start of the study. When we are not exploring potential moderating relationships, we also include G2 sex (0=female and 1=male) as a control variable. We also control for factors that are not causally prior to G2 gang membership but are important when modeling G3 gang membership. Specifically, we include *G2 age at G3's birth*,[6] and the *average level of contact of G2 with G3* in early childhood, which is based on the scale measure of G2 contact with G3 described above. The final contact score was formed by averaging the scores spanning G3 ages 9 to 11. When not exploring potential moderating relationships, *G3 sex* (0=female and 1=male) is also included. Descriptive statistics are presented in Table 1 for the full sample as well as for G2 males, G2 females, G3 males, and G3 females.

Analytic Plan

The overarching goals of this study are to determine whether or not there is IG continuity in gang membership and, if so, whether ineffective parenting behaviors mediate this

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[6]Prior intergenerational research looking at time-stable information regarding parent-child dyads generated from prospective, longitudinal design originating from one birth cohort accounts for the parent age at birth of the child in two ways: 1) as a control variable or 2) as a mediator of the relationship between parental behavior and child behavior. Therefore, our analyses were run both ways to determine the sensitivity to methodological decisions. In both analyses, the results on our variables of interest in terms of magnitude and significance are the same. Moreover, age at birth of the child was not a significant mediator of the relationship between parent gang membership and child gang membership, but it is significant in some of the individual paths estimated. Thus, we present the models controlling for age at birth only.

relationship. As such, the analysis will proceed in two steps. First, a series of logistic regressions will be estimated to examine the effect of G2 gang membership on G3 gang membership accounting for potential moderators of this relationship (see Figure 2). In essence, this set of regressions estimates C, which is the total effect of G2 gang membership (X) on G3 gang membership (Y), and the contingent effect of G2 gang membership on G3 gang membership across moderator W_n (n = 1, 2, 3) is calculated as C x C_n. Given that we identified three potential moderators of this IG relationship and we are interested in the individual as well as interactive effect of each moderator, we separate the sample by G2 sex, G3 sex, and G2 and G3 sex combinations and calculate the contingent effect of minimum level of contact.

The second step in our analytic process is to examine *how* G2 gang membership affects G3 gang membership. Mediation analysis allows for the exploration of potential causal mechanisms between an independent variable (i.e., G2 gang membership) and an outcome (i.e. G3 gang membership) by examining how intervening variables (i.e., mediators) transmit the effect of the independent variable on the dependent variable (Imai, Keele, & Yamamoto, 2010; MacKinnon & Fairchild, 2009). Mediation is examined through the estimation of two effects: 1) the effect of the independent variable on the mediator (path 'a' in Figure 3) and 2) the effect of the mediator on the dependent variable (path 'b' in Figure 3). The product of these two coefficients (a*b) is the indirect effect.

Specifically, we utilize a procedure established by Kohler, Karlson and Holm (2011; Karlson & Holm, 2011) that compares nested nonlinear probability models and subsequently decomposes the total effect of an independent variable on a dependent variable into direct and indirect effects. This method – the KHB method – was developed specifically for binary outcomes (but can also be used with other nonlinear probability models and linear regression) and can decompose effects when including discrete or continuous mediators (Karlson, Holm, & Breen, 2011). Additional advantages of this method include 1) it allows for the simultaneous estimation of mediators which reduces omitted variable bias to assess overall indirect effects, 2) it assesses the combined effect of the mediators to determine whether the sum of the mediators eliminates the direct effect, and 3) it disentangles the contribution of the mediators allowing for the identification of the contribution of each mediator to the total effect (Karlson, Holm, & Breen, 2011; see also Preacher & Hayes, 2008).

Figure 3 presents our proposed mediation model with multiple mediators where X is the independent variable (i.e., G2 gang membership), Y is the outcome of interest (i.e., G3 gang membership), and M_{1-3} are the proposed mediators (i.e., G2 maltreatment of G3, G2 discipline of G3, and G2 attachment to G3), Figure 3 shows the direct and indirect paths from G2 gang membership to G3 gang membership with c' representing the direct effect, a_{1-3} representing the effect for independent variable on each mediator, and b_{1-3} representing the effect of the mediators on the dependent variable. Since we propose that both G2 sex and G3 sex moderate the relationship between G2 gang membership and G3 gang membership, we estimate all paths (a paths, b paths, c' path) separately for G2 sex-G3 sex dyad subsamples (i.e., G2 males and G3 males, G2 males and G3 females, G2 females and G3 males, and G2 females and G3 females).

When modeling our "a" paths, we utilized a logistic regression model to estimate the effects of G2 gang membership on G2 maltreatment of G3, which is a binary outcome, and we used Ordinary Least Squares (OLS) regression for our other two mediators. Prior to estimation of the effect of G2 gang membership on G2 attachment to G3, we first log transformed the variable given the extreme left skew of G2 attachment, which violates the assumption of a normally distributed outcome for OLS. We then estimated each "b" path using logistic regression given the binary nature of our dependent variable, G3 gang membership. Finally, we estimated the direct, indirect, and total effects using logistic regression as well. Specifically, we estimated the direct, indirect, and total effect of G2 gang membership on G3 gang membership for each proposed mediator individually before combining all three proposed mediators in the same model to assess the direct, cumulative indirect effect, and total effect of G2 gang membership on G3 gang membership accounting for our proposed mediators. We then decomposed the indirect effect of each mediator and estimated its contribution to the overall total effect when all of our mediators were included in the same model. All analyses were performed in Stata 14 (StataCorp, 2015).

Results

Naïve Direct Effects

We first explored whether or not G2 gang membership is a risk factor for G3 gang membership. Given the potential for G2 sex, G3 sex, the G2-G3 sex combination, and minimum level of contact between G2 and G3 in late childhood to moderate this relationship, we present the odds ratios from a series of logistic regressions generated across each potential moderator and combination of moderators in Table 2.

The results indicate that when grouping all G2s together, there is no evidence of intergenerational continuity in gang membership as G2 gang membership is not a significant predictor for G3 gang membership across any level of contact. Moreover, once we allowed only G2 sex or G3 sex and level of contact to moderate the relationship between G2 gang membership and G3 gang membership, there is no evidence of continuity as none of the odds ratios reach statistical significance (p>.05). However, dividing the sample by the sex combination of the parent-child dyad reveals evidence of intergenerational continuity in gang membership. Among G2 fathers, gang membership increases the likelihood of gang membership among sons, but this relationship is moderated by level of contact between fathers and sons in late childhood. Specifically, among all eligible G2 fathers, the relationship between G2 gang membership and G3 gang membership is positive, but only marginally significant (OR=2.680, p<.10). However, the relationship between G2 gang membership and G3 gang membership is positive and statistically significant once we limited the sample to those fathers who supervise their sons for at least one hour a year (OR=4.192, p<.05), and the effect of G2 gang membership on G3 gang membership among father-son dyads increases in strength as level of contact increases. In fact, among fathers who supervise their sons for at least an hour a month or at least an hour a week, prior gang membership increases the likelihood of child gang membership over five-fold. Moreover, sons who live with their fathers are over seven times more likely to join a gang if their father was previously in a gang (OR=7.390, p<.05). There is also evidence of intergenerational

continuity in gang membership between mothers and daughters, but unlike father-son dyads, this relationship is not moderated by level of contact. This latter finding is a result of all G2 mothers living with their daughters. Among G2-G3 female dyads, daughters were over eight times more likely to join a gang if their mother was in a gang (OR=8.159, p<.05).

Mediation Analyses

The next step in our analysis involved analyzing whether the proposed G2 parenting behaviors mediate the relationship between G2 gang membership and G3 gang membership, net of control variables. We remind the reader that the mediational analyses were only conducted among G2s who had a minimum of monthly supervisory contact in one year (G3 ages 9 to 11) with G3s as this requirement was necessary to construct two of our parenting measures (e.g., consistency of discipline and attachment). In addition, we estimated all paths across G2 sex-G3 sex dyads given the importance of the G2-G3 sex dyad. Table 3 displays the effect of G2 gang membership on our proposed mediators ('a' paths). There is a significant relationship between G2 gang membership and G2 maltreatment of G3 among father-son dyads (b=2.213, p<.05). In other words, former male gang members are over nine times more likely to maltreat their sons. We also see that G2 gang membership negatively affects discipline among mother-daughter dyads as mothers who were in a gang exhibit less consistent discipline of their daughters (b=-.284, p<.01). Among opposite sex dyads, G2 gang membership is unrelated to any of the specified parenting behaviors. G2 gang membership is also unrelated to discipline and attachment among father-son dyads and maltreatment and attachment among mother-daughter dyads.

Table 4 shows the relationship between G2 parenting behaviors and G3 gang membership ('b' paths). Among father-son dyads, we see that G2 maltreatment of G3 increases the likelihood that a son will join a gang (b=2.205, p<.01). In fact, boys who are abused by one's father are over nine times more likely to join a gang compared to boys who are not abused by one's father. Among father-daughter dyads, attachment to G3 in late childhood is negatively related to G3 joining a gang (b=-13.376, p<.10), but this relationship is only marginally significant. Consistency of discipline by fathers is unrelated to the likelihood of gang participation among sons or daughters. With respect to G2 female parenting behaviors, more consistent discipline decreases likelihood of one's son joining a gang, but this relationship is only marginally significant as well (b=-1.839, p<.10). The remaining maternal parenting behaviors are unrelated to the likelihood of gang membership among sons and daughters.

We now turn attention to direct, indirect and total effects of G2 gang membership on G3 gang membership across G2 sex-G3 sex dyads (see Table 5). We focus on G2 males and G3 males first and examine the effects through each proposed mediator prior to examining the cumulative mediating effect of all three parenting behaviors. Recall, G2 gang membership increased the likelihood of G2 maltreatment of G3 and, in turn, G2 maltreatment of G3 increased the likelihood of G3 gang membership among father-son dyads. Based on the joint significance test of the "a" path and the "b" path (Taylor, MacKinnon & Tein, 2008), there appears to be an indirect effect of G2 gang membership on G3 gang membership through G2 maltreatment of G3 among father-son dyads. Table 5 supports this specific indirect effect

(b=.383, p<.05), and it accounts for nearly 40% (.383/.978) of the total effect of G2 gang membership on G3 gang membership among father-son dyads. Notably, though, the total effect of G2 gang membership on G3 gang membership among father-son dyads is positive but only marginally significant (b=.978, p<.10). For the other two proposed paths between G2 gang membership and G3 gang membership - G2 consistency of discipline and G2 attachment to G3 - we see no evidence of significant indirect effects through these mediators, respectively, and this is expected given the lack of significant 'a' paths and 'b' paths for these mediators. Nevertheless, there is a positive, total effect of G2 gang membership on G3 gang membership. When accounting for all three parenting behaviors in the same model, there is evidence of a marginally significant and positive, direct effect of G2 gang membership on G3 gang membership (b=1.248, p<.10) and a significant and positive, total effect of G2 gang membership on G3 gang membership (b=1.335, p<.05) among father-son dyads. Table 6 shows the individual contribution of each parenting behavior to the total effect of G2 gang membership on G3 gang membership. Although the total indirect effect of all three mediators does not achieve statistical significance as indicated in Table 5, the specific indirect effect of G2 maltreatment of G3 is marginally significant (b=.390, p<.10), which can be seen in Table 6. Furthermore, this specific indirect effect accounts for a little over 29% of the total effect of G2 gang membership on G3 gang membership among father-son dyads.

Table 5 and Table 6 fail to demonstrate any evidence of a direct, indirect, or total effect of G2 gang membership on G3 gang membership among father-daughter dyads and mother-son dyads. Not only are these results consistent with estimates from our 'a' paths and 'b' paths, but the lack of significant total effects of G2 gang membership on G3 gang membership is also consistent with the results regarding the naïve direct effects of G2 gang membership on G3 gang membership among these two subsamples.

Among mother-daughter dyads, Table 5 shows no evidence that any of the parenting behaviors examined mediate the relationship between G2 gang membership and G3 gang membership since there are no significant indirect effects for any proposed mediator individually or cumulatively. However, we see that in each model estimated, G2 gang membership has a positive, significant direct effect on G3 gang membership. For two of our models, the mediation model including consistency of discipline only and the mediation model including all three parenting behaviors, the direct effect is only marginally significant (p<.10). This effect achieves statistical significance (p<.05) in the model that includes maltreatment of G3 as the mediator and G2 attachment to G3, individually. Moreover, the direct effect between G2 and G3 gang membership, by in large, accounts for the positive, significant total effect of G2 gang membership on G3 gang membership that is consistent across each model estimated for mother-daughter dyads. In fact, Table 6 demonstrates that when all three mediators are included in the same model, the direct effect of G2 gang membership on G3 gang membership among mother-dyads accounts for nearly 90% of the total effect of G2 gang membership on G3 gang membership (1-[10.74+.50-.96]).

Discussion

Prior qualitative work on gang involvement is suggestive of continuity in gang membership across successive generations (Horowitz, 1983; Moore et al., 1978; Vigil, 1988; 2002; cf. Decker & van Winkle, 2001), but exacting data requirements have until now resulted in a general lack of quantitative evidence evaluating intergenerational continuity of gang involvement. Drawing on the developmental and life-course perspective and intergenerational interactional theory (see Thornberry, 2005), the current study employed data from the prospective, longitudinal RYDS/RIGS studies to quantitatively assess intergenerational continuity in gang membership. Informed by research on the intergenerational continuity in various maladaptive behaviors (e.g., Auty et al., 2015; Thornberry et al., 2003a), we explored whether parent and child sex and level of contact serve as key moderators of any observed link across generations and, moreover, examined the role of parenting processes as an explanation for the link between parent gang membership and child gang membership.

Overall, results yielded mixed evidence for the intergenerational continuity of gang involvement, with findings supportive of intergenerational continuity depending upon parent-child sex dyads and contact level. Evidence for intergenerational parallelism in gang membership was confined to same-sex parent child dyads. G3 daughters of G2 gang involved mothers were markedly more likely to become involved in a gang. Indeed, when mother's (G2) gang involvement status is considered as a risk factor for G3 daughter gang involvement, the odds of G3 joining a gang are over eight times greater when the child's mother participated in a gang as an adolescent herself, as compared to not being gang involved. The connection between mother and daughter gang involvement was not conditional on contact level; in general, supervisory levels were high with G3 daughters in the sample living with G2 mothers. With mothers and daughters in close contact, results of this study strongly suggest that efforts to prevent gang membership among girls should consider the added risk to girls who were born to a mother who was herself involved in a gang as an adolescent. Interestingly, though, the intergenerational continuity between mothers and daughters does not appear to be the result of problematic parenting behaviors during late childhood. Among mothers, G2 gang involvement did adversely impact consistency of discipline for daughters (though, interestingly, there was no such adverse effect of G2 gang involvement on discipline style for sons). While inconsistent discipline may lead to other developmental problems, it was not found to be a significant predictor of gang involvement among G3 females in this analysis. Thus, findings for intergenerational continuity between mothers and daughters remains in moderated mediation models and appears, at least in these analyses, to be direct in nature (which implies either a true direct effect or an alternative mechanism not modeled). We suggest replication of this relationship among larger samples to further confirm the connection between mother and daughters' gang involvement as well as explore other potential mediating pathways from G2 gang membership to G3 gang membership among mother-daughter dyads.

Intergenerational continuity was also found for father-son dyads, but this relationship was conditional on level of contact. Recall, G2 males have considerably less contact with G3s as compared to G2 females (see Table 1). When a gang-involved father's contact level reaches

at least monthly supervisory contact, G2 gang involvement becomes a significant risk factor for G3 gang involvement ($p<0.05$) whereas it was only marginally significant for the minimum level of any contact/no contact ($p<0.10$). Though not as pronounced as the risk among mother-daughter dyads, fathers' gang membership still substantially increased the odds of G3 gang involvement over five-fold when supervision includes monthly or weekly contact and well over seven-fold when fathers and sons lived under the same roof during late childhood.

While the assessed parenting behaviors failed to explain continuity in gang membership among mothers and daughters, there is evidence to support an indirect effect of father gang membership on son gang membership through child maltreatment, specifically. A father's gang participation during his adolescence increases maltreatment of sons which, in turn, increases a son's likelihood of joining a gang prior to the age of 18. The specific indirect path from G2 gang membership to G3 gang membership through maltreatment among father-son dyads finding is important in many respects. It is informative with respect to the consequences of gang membership and the criminogenic consequences of maltreatment. With regard to the consequences of gang membership, prior work finds a relationship between gang membership and child maltreatment, in general (Augustyn et al., 2014). However, the present research limited the examination of the effects of gang membership to maltreatment of one's own biological children and only found evidence of an increased likelihood of maltreatment among gang-involved fathers and their sons. The present research is also enlightening with respect to the criminogenic effects of victimization (see also Gilman et al., in press). For instance, prior research indicates that child maltreatment during adolescence, and not childhood, appears to be related to criminal and delinquent behavior (Eckenrode et al., 2001; Ireland et al., 2002; Thornberry et al., 2001) whereas we found that a son's maltreatment by one's father during childhood (prior to the age of 11) increases the likelihood of gang membership, a known correlate of delinquency. Therefore, it appears that there is more variation in the criminogenic effects of maltreatment and the consequences of gang membership on maltreatment than previously suggested.

This identified pathway is also important because it can guide gang prevention programs to focus efforts among father-son dyads where the father is a former gang member. Disrupting intergenerational continuity in gang membership for males necessitates a focus on preventing child maltreatment including physical, sexual, and emotional abuse as well as child neglect. Conflict resolution in the gang environment often involves violence or other maladaptive behaviors (Curry, Decker & Pyrooz, 2014; Klein, 1995; Miller, 2011). Behaviors or neglect of expected responsibilities which are learned or reinforced in a gang may show up through maltreatment of one's kin. As for the offspring, experiencing physical abuse may teach a son it is okay to address conflict through violence, whereas being neglected may make the social connections that a gang may provide more appealing. In this way, child maltreatment may contribute to direct transmission (e.g., direct modeling of behaviors and attitudes) as well as indirect transmission (e.g., indirect communication that conventional responsibilities are unimportant) (see Giordano, 2010). To distinguish between these possibilities, additional research unpacking the type or types of child maltreatment experienced might be usefully pursued.

As it stands, programs for male ex-gang members that encourage effective parenting and prosocial conflict resolution techniques such as the Triple P Positive Parenting Program (Printz et al., 2009), and Parent-Child Interaction Therapy (Chaffin et al., 2004) are likely to help break the family cycle of gang membership. Perhaps not surprisingly, programmatic efforts would have the most impact when they focus on fathers who have nontrivial levels of contact with their sons. We caution, though, that these results suggest that we should reduce the level of contact between formerly gang-involved fathers and their sons. Because fathers (and mothers) provide many benefits to children, families and communities even if they were once gang-involved or currently engage in antisocial activities (e.g., Rose & Clear, 1998), we of course do not recommend reducing contact as a general strategy to reduce intergenerational continuity in gang membership, though there are, unfortunately, instances where reduced contact may benefit the prosocial development of the child, including lowering the likelihood of gang participation.

The fact that intergenerational continuity occurs in same-sex parent-child dyads underscores the idea that children often more closely identify with parents of the same sex. However, we rightfully acknowledge this study did not fully identify how same-sex dyads promote intergenerational continuity in gang membership. Among female dyads, we only found evidence of a direct effect, and among male dyads we only found evidence of partial mediation through maltreatment. Future research on intergenerational continuity in gang membership should further explore how the dynamics of same-sex parent-child dyads promote parallelism in behavior and it should also explore alternative mediating pathways or explanations of intergenerational continuity including learning, criminogenic environments, and genetics (see Farrington, 2011).

The current study provides much needed quantitative evidence on the intergenerational continuity of gang involvement, but there are certain limitations of the current research, which provide opportunities for refinement in future research. First, we suggest replication of our analyses with larger sample sizes in order to increase power and confirm the results presented herein. Not all daughters and sons of G2s have reached the age to be included in this analysis; thus, replication with the RYDS/RIGS data several years down the line is also encouraged. In particular, we did not find evidence for intergenerational continuity across opposite-sex dyads, though risk factor analyses revealed negative, albeit not statistically significant, odds ratios. These findings are suggestive of the possibility that intergenerational discontinuity (i.e., a protective effect) might be observed for father-daughter and mother-son dyads with larger samples sizes yielding increased power. Second, we note that these data are from one city in the United States with an emergent gang problem and data collection began when parents were teens in the late 1980s and early 1990s. It is true that most intergenerational research is conducted using a sample from one city and one cohort, but OJJDP's sponsorship of similar studies (i.e., in Denver, Pittsburgh and Seattle) that generated similar findings on an array of topics related to crime and delinquency suggest generalizeability is enhanced. Furthermore, our sample consists of predominantly minorities. Thus, we encourage replication of this study's findings with alternative data sources to confirm our results. Third, our study examined the role of parenting practices—including maltreatment, attachment, and consistency of discipline—during late childhood only. While this enabled us to preserve appropriate time-order between mediating and outcome variables,

some research on intergenerational continuity of antisocial behavior suggest that parenting behaviors, specifically maltreatment, is more problematic if it occurs in adolescence as opposed to childhood (Eckenrode et al., 2001; Ireland et al., 2005; Thornberry et al., 2001). To achieve sufficient sample sizes for analyses, we defined gang membership as any participation in adolescence (e.g., age 12 when G3s first reported gang membership through the age 17). If we also measured our mediators during adolescence, temporal ordering would certainly be an issue. Therefore, if sample sizes permit, encourage future research to examine more contemporaneous effects of parenting on gang membership as well as test alternative mediating pathways and explanations beyond parenting.

Although this study addresses a limited set of factors that might contribute to the intergenerational continuity of gang membership, we found that the sex of the parent and child and relatedly, the contact between them were significant moderators of this continuity. Additionally, in some instances the pathway to gang membership among the second generation operated through the quality of parenting. However, life course and development theories generally, and interactional theory, specifically, suggest that other factors might affect continuity in gang membership as well (e.g., norms or values). We hope that this initial examination of intergenerational continuity in gang membership will stimulate further investigations that explore other mediating and moderating factors and yield useful information for policy makers seeking to break a family cycle of gang participation.

Acknowledgments

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Biographies

Megan Bears Augustyn is an Assistant Professor in the Department of Criminal Justice at the University of Texas at San Antonio. Her research focuses on the causes and consequences of crime and victimization across the life course and legal socialization.

Jeffrey T. Ward is an assistant professor in the Department of Criminal Justice at Temple University. His areas of research include developmental and life-course criminology, juvenile delinquency, and measurement.

Marv Krohn is a Professor in the Sociology and Criminology & Law department at the University of Florida. He has a long standing interest in development and life course criminology having worked on the Rochester Youth Development Study since its inception. Professor Krohn (with his co-authors) was the recipient of the American Society of Criminology's Michael J. Hindelang Award for Outstanding Scholarship for their book entitled Gangs and Delinquency in Developmental Perspective. He is a fellow of the American Society of Criminology and has won teaching awards at both the graduate and undergraduate levels.
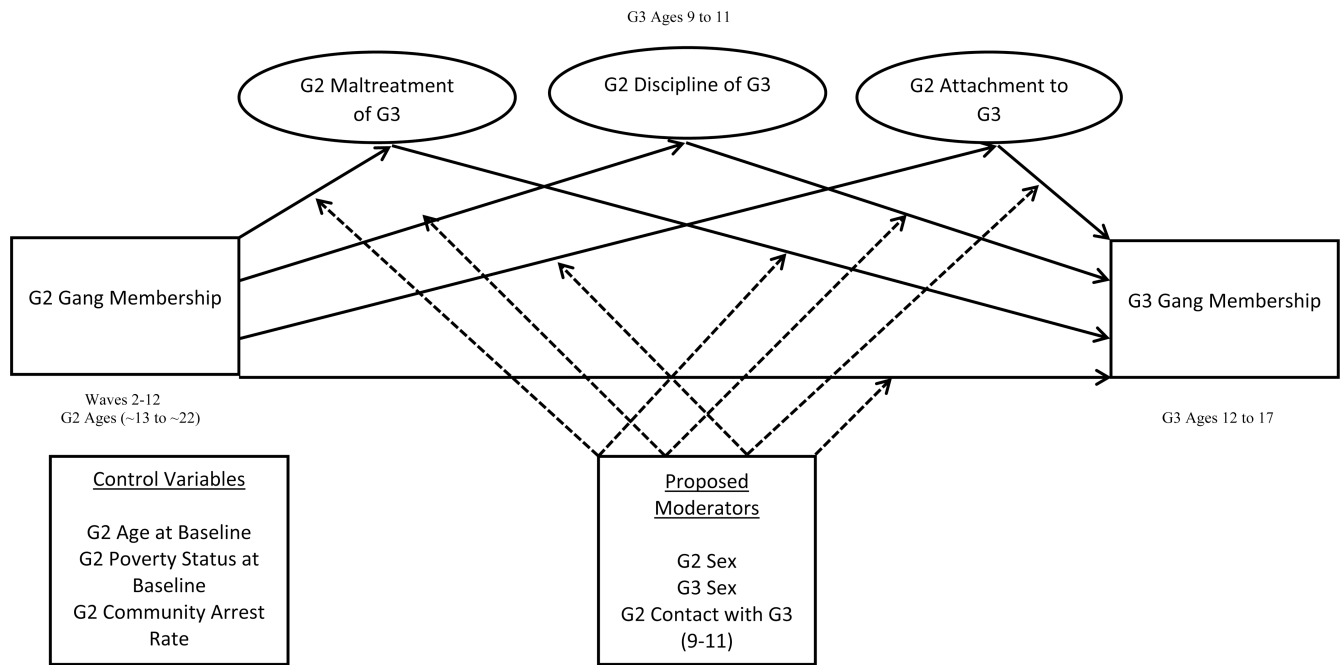
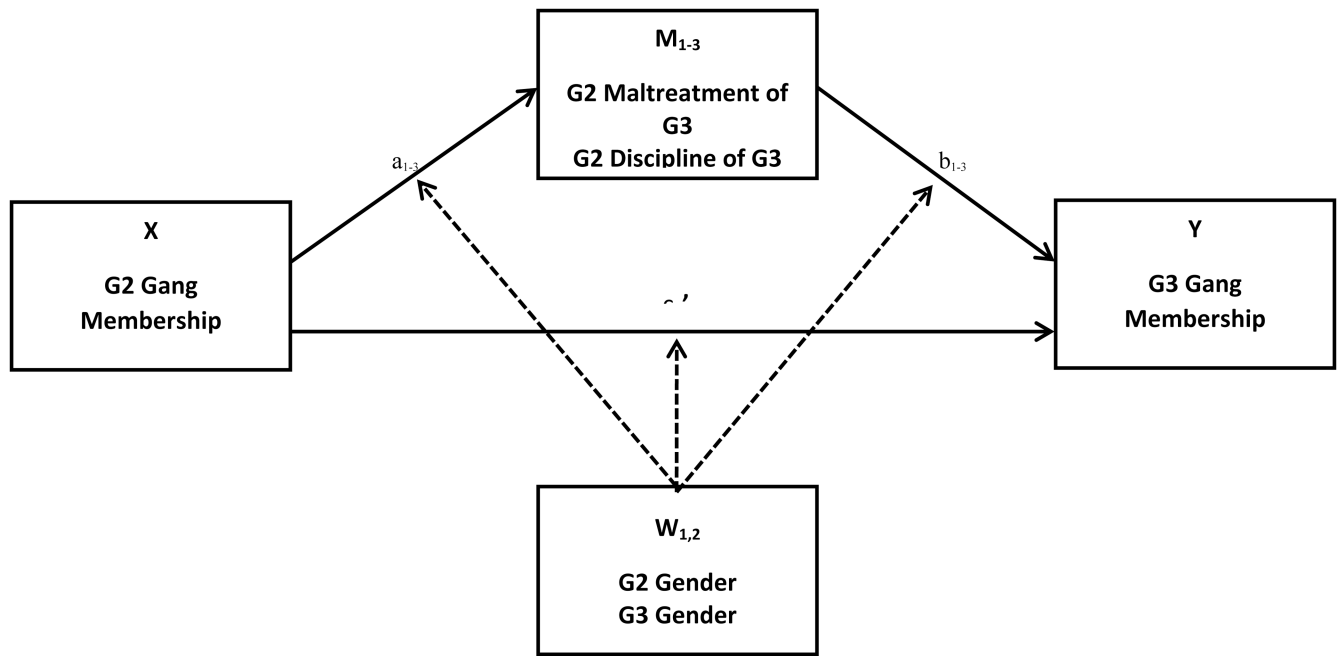**Figure 1. Proposed Theoretical Model Linking Parent Gang Membership to Child Gang Membership**
NOTE: Solid lines represent proposed theoretical paths. Dashed lines represent moderation.
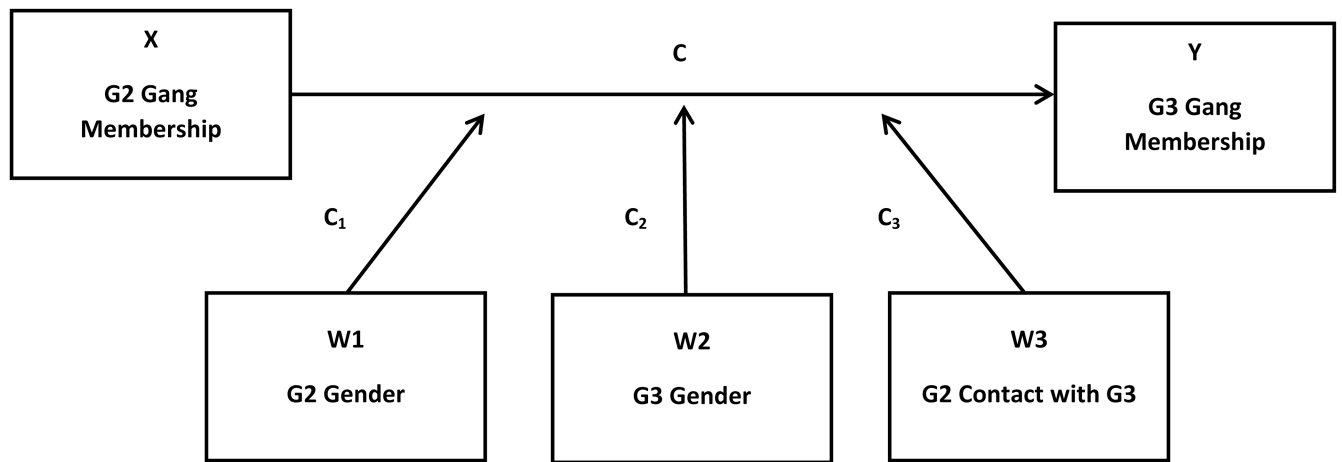
Figure 2. Direct Effect of G2 Gang Membership on G3 Gang Membership

Figure 3. Moderated Mediation (Hayes, 2013) with Multiple Mediators Assessing the Effects of G2 Gang Membership on G3 Gang Membership

Table 1

Descriptive Statistics

	Range	Full Sample (N = 371) Mean (SD)/Proportion	G2 Males (N = 223) Mean (SD)/Proportion	G2 Females (N = 148) Mean (SD)/Proportion	G3 Males (N =183) Mean (SD)/Proportion	G3 Females (N = 188) Mean (SD)/Proportion
Outcome						
G3 Gang Membership	0,1	.156	.161	.149	.202	.112
Treatment						
G2 Gang Membership	0,1	.374	.404	.331	.344	.404
Mediators						
Maltreatment	0,1	.140	.112	.182	.146	.133
Discipline[a]	0-3	1.828 (.413)	1.789 (.403)	1.886 (.421)	1.864 (.395)	1.792 (.429)
Attachment[a]	0-3	3.868 (.168)	3.887 (.144)	3.842 (.195)	3.852 (.182)	3.886 (.151)
Control Variables						
G2 Age at Baseline	11.8-15.4	14.040 (.731)	14.10 (.734)	13.944 (.720)	14.020 (.763)	14.060 (.700)
G2 Sex	0,1	.601	-	-	.596	.606
G2 Community Arrest Rate	.12-7.87	4.472 (1.985)	4.194 (1.839)	4.892 (2.124)	4.609 (1.933)	4.338 (2.031)
G2 Poverty Level	0,1	.366 (.482)	.358 (.481)	.378 (.487)	.344 (.476)	.388 (.489)
G2 Delinquency at Baseline	0-213	8.583 (22.450)	9.754 (24.757)	6.817 (18.398)	9.400 (26.263)	7.787 (18.017)
G2 Age at G3 Birth	13.2-25.5	19.594 (2.574)	20.257 (2.220)	18.594 (2.751)	19.384 (2.440)	19.798 (2.689)
G2 Contact with G3 Aged 9-11	0-6	5.183 (1.460)	4.672 (1.682)	5.935 (.397)	5.206 (1.372)	5.160 (1.548)
G3 Sex	0,1	.493	.489	.500	-	-
Black	0,1	.768	.700	.872	.754	.781
Hispanic	0,1	.143	.179	.088	.164	.122

[a] Sample size is reduced because this measure is only calculated for G2s who had a minimum of monthly supervisory contact: Full Sample (N = 332); G2 Males (M = 192); G2 Females (N = 140); G3 Males (N = 171); G3 Females (N = 161)

Table 2

Summary of Logistic Regression Models Examining the Effect of G2 Gang Membership on G3 Gang Membership across G2 Levels of Contact with G3 from Ages 9-11

	All Eligible G2s	G2s with Any Supervisory Contact	G2s with at least Monthly Supervisory Contact	G2s with at least Weekly Supervisory Contact	G2s living with G3s
	OR	OR	OR	OR	OR
Full Sample	1.252	1.420	1.556	1.556	1.374
G2 Males	1.389	1.681	1.962	1.706	1.460
G2 Females	1.317	1.317	1.317	1.317	1.317
G3 Males	1.532	1.890	2.038	1.947	1.926
G3 Females	.974	1.143	1.297	1.121	1.027
G2 Males and G3 Males	2.680[†]	4.192[*]	5.606[*]	5.579[*]	7.390[*]
G2 Males and G3 Females	.435	.502	.378	.213	.120
G2 Females and G3 Males	.423	.423	.423	.423	.423
G2 Females and G3 Females	8.159[*]	8.159[*]	8.159[*]	8.159[*]	8.159[*]

NOTE: All models control for G2 age at baseline, G2 Sex (if necessary), G2 poverty status at baseline, G2 community arrest rate at baseline, G2 delinquency at baseline, G2 age at G3 birth, G2 level of contact with G3, G3 Sex, race/ethnicity.

ABBREVIATION: OR = Odds Ratio

[†] p < .10;

[*] p < .05;

[**] p < .01

Table 3

Regression Results for "a" Paths of Mediation Model (Mediator Regressed on G2 Gang Membership)

Mediator	Estimate	95% CI
G2 Males and G3 Males (N=100)		
Maltreatment [a]	2.213[*]	(.797, 3.488)
Discipline	-.017	(-.154, .120)
Attachment	-.022	(-.034, .008)
G2 Males and G3 Females (N=92)		
Maltreatment [a]	-.276	(-1.738, 1.185)
Discipline	.069	(-.112, .249)
Attachment	-.004	(-.019, .010)
G2 Females and G3 Males (N=71)		
Maltreatment [a]	.963	(-.480, 2.407)
Discipline	-.067	(-.309, .175)
Attachment	-.021	(-.051, .009)
G2 Females and G3 Females (N=69)		
Maltreatment [a]	.017	(-1.476, 1.510)
Discipline	-.284[**]	(-.475, -.094)
Attachment	-.003	(-.027, .018)

NOTE: All models control for G2 age at baseline, G2 poverty status at baseline, G2 community arrest rate at baseline, G2 delinquency at baseline, G2 age at G3 birth, G2 level of contact with G3, G3 sex, race/ethnicity.

[a] Logistic Regression Used

ABBREVIATION: CI = Confidence Interval

[†] p < .10;

[*] p < .05;

[**] p < .01

Table 4

Logistic Regression Results for 'b' Paths of Mediation Model (Mediator Regressed on G3 Gang Membership)

Mediator	Estimate	95% CI
G2 Males and G3 Males (N=100)		
Maltreatment	2.205 [**]	(.820, 3.590)
Discipline	-.162	(-1.540, 1.216)
Attachment	2.164	(-12.589, 16.917)
G2 Males and G3 Females (N=92)		
Maltreatment	-.125	(-.205, 1.804)
Discipline	-1.054	(-2.676, .567)
Attachment	-13.376 [†]	(-28.101, 1.349)
G2 Females and G3 Males (N=71)		
Maltreatment	-.661	(-2.612, 1.290)
Discipline	-1.839 [†]	(-3.684, .006)
Attachment	-3.145	(-14.232, 7.943)
G2 Females and G3 Females (N=69)		
Maltreatment	.698	(-1.341, 2.738)
Discipline	-1.537	(-3.979, .906)
Attachment	8.365	(-16.731, 33.462)

NOTE: All models control for G2 age at baseline, G2 poverty status at baseline, G2 community arrest rate at baseline, G2 delinquency at baseline, G2 age at G3 birth, G2 level of contact with G3, G3 sex, race/ethnicity.

ABBREVIATION: OR = Odds Ratio; CI = Confidence Interval

[†] $p < .10$;

[*] $p < .05$;

[**] $p < .01$

Table 5

Model results of Direct, Indirect, and Total Effects of G2 Gang Membership on G3 Gang Membership

Mediator	Direct Effect		Indirect Effect		Total Effect	
	Estimate	95% CI	Estimate	95% CI	Estimate	95% CI
G2 Males and G3 Males (N=100)						
Maltreatment	.595	(-.524, 1.714)	.383*	(.015, 1.714)	.978†	(-.114, 2.071)
Discipline	.972†	(-.073, 2.018)	.001	(-.093, .095)	.973†	(-.066, 2.013)
Attachment	1.609*	(.341, 2.018)	-.172	(-.536, .191)	1.436*	(.227, 2.645)
All Mediators	1.248†	(-.060, 2.556)	.087	(-.472, .647)	1.335*	(.097, 2.574)
G2 Males and G3 Females (N=92)						
Maltreatment	-.833	(-2.445, .786)	.001	(-.028, .024)	-.832	(-2.452, .787)
Discipline	-1.172	(-2.918, .575)	-.108	(-.365, .148)	-1.280	(-3.047, .486)
Attachment	-.903	(-2.658, .852)	.028	(-.203, .261)	-.874	(-2.626, .878)
All Mediators	-1.291	(-3.226, .643)	-.103	(-.560, .354)	-1.395	(-3.355, .566)
G2 Females and G3 Males (N=71)						
Maltreatment	-.202	(-1.699, 1.294)	-.003	(-.190, .183)	-.205	(-1.703, 1.291)
Discipline	-1.458	(-3.444, .587)	.154	(-.405, .712)	-1.304	(-3.248, .639)
Attachment	-.964	(-2.719, .791)	.103	(-.183, .389)	-.861	(-2.572, .851)
All Mediators	-1.406	(-3.449, .637)	.131	(-.497, .759)	-1.275	(-3.232, .682)
G2 Females and G3 Females (N=69)						
Maltreatment	2.166*	(.037, 4.296)	-.030	(-.201, .142)	2.136*	(.012, 4.261)
Discipline	1.946†	(-.215, 4.109)	.294	(-.533, 1.120)	2.241*	(.040, 4.441)
Attachment	2.167*	(.048, 4.190)	-.048	(-.316, .219)	2.118*	(.088, 4.246)
All Mediators	2.033†	(-.197, 4.264)	.233	(-.691, 1.157)	2.266*	(.045, 4.488)

NOTE: All models control for G2 age at baseline, G2 poverty status at baseline, G2 community arrest rate at baseline, G2 delinquency at baseline, G2 age at G3 birth, G2 level of contact with G3, G3 sex, race/ethnicity.

ABBREVIATION: OR = Odds Ratio; CI = Confidence Interval

†
p < .10;

*
p < .05;

$**$ $p < .01$

Table 6

Contribution of Mediators to Total Effect of G2 Gang Membership on G3 Gang Membership when All Mediators Included in the Same Model

Mediator	Indirect Effect Estimate	SE	% of Total Effect
G2 Males and G3 Males (N=100)			
Maltreatment	.390 [†]	(.221)	29.2
Discipline	-.043	(.084)	-3.24
Attachment	-.259	(.215)	-19.53
G2 Males and G3 Females (N=92)			
Maltreatment	-.000	(.002)	0.00
Discipline	-.109	(.172)	7.85
Attachment	.155	(.155)	-0.43
G2 Females and G3 Males (N=71)			
Maltreatment	-.024	(.077)	1.88
Discipline	.149	(.277)	-11.65
Attachment	.007	(.151)	-.53
G2 Females and G3 Females (N=69)			
Maltreatment	-.022	(.126)	-.96
Discipline	.243	(.440)	10.74
Attachment	.011	(.011)	.50

NOTE: All models control for G2 age at baseline, G2 poverty status at baseline, G2 community arrest rate at baseline, G2 delinquency at baseline, G2 age at G3 birth, G2 level of contact with G3, G3 sex, race/ethnicity.

ABBREVIATION: SE = Standard Error

[†] $p < .10$;

[*] $p < .05$;

[**] $p < .01$